What is claimed is:

1. A method of enabling the removal of fluorine containing residue from a semiconductor substrate comprising the steps of:

applying a gas and/or vapor to which the residue is reactive to the residue while the temperature of the substrate is at an elevated level with respect to ambient temperature and the residue is exposed to ultraviolet radiation, for a time period which is sufficient to effect at least one of volatilizing the residue or rendering the residue hydrophilic enough to be removable with deionized water.

2. The method of claim 1 wherein the gas and/or vapor is comprised of at least one member selected from the group consisting of amines, alcohols, thiols, ammonia, sulfur dioxide, sulfur dioxide and oxygen, sulfur trioxide, hydrogen sulfide, carbon dioxide, carbon monoxide, carbon disulfide, carbonyl sulfide, hydrogen peroxide, and water.

3. The method of claim 2 wherein the gas and/or vapor is applied at a pressure of between 50 Torr and at about one atmosphere.

4. The method of claim 2 wherein the residue is exposed to ultraviolet radiation by blanketing the residue with ultraviolet radiation.

5. The method of claim 3 wherein before the gas and/or vapor is

applied, an ashing process is performed on the photoresist.

6. The method of claim 4 wherein the gas and/or vapor is selected from the group of ammonia, hydrogen, and sulfur dioxide.

7. The method of claim 2 wherein after the gas and/or vapor is applied, the substrate is rinsed with deionized water.

8. The method of claim 5 wherein after the gas and/or vapor is applied, the substrate is rinsed with deionized water.

9. The method of claim 8 wherein the gas or vapor is ammonia.

10. The method of claim 9 wherein the ammonia is mixed with nitrogen.

11. The method of claim 10 wherein the mixture of ammonia and nitrogen is applied at about atmospheric pressure.

12. A method of processing a semiconductor wafer comprising the steps of:

coating the wafer with a photoresist,

imaging a pattern on the photoresist with ultraviolet radiation,

developing the photoresist,

hardbaking or stabilizing the photoresist,

forming integrated circuit components on the wafer, and

removing the photoresist from the wafer, by

a) performing an ashing process on the photoresist which removes the photoresist except for a residue, and

b) removing the residue by applying a gas and/or vapor selected from the group of amines, alcohols, thiols, ammonia, sulfur dioxide, sulfur dioxide and oxygen, sulfur trioxide, hydrogen sulfide, carbon dioxide, carbon monoxide, carbon disulfide, carbonyl sulfide, hydrogen peroxide, and water, to the residue while the temperature of the substrate is at an elevated level with respect to ambient temperature and the residue is blanketed with ultraviolet radiation for a time period which is sufficient to effect at least one of volatilizing the residue or rendering the residue hydrophilic enough to be removable with deionized water.

13. The method of claim 12 wherein after the gas is applied, the substrate is rinsed with deionized water.

14. The method of claim 12 wherein the gas includes at least one member selected from the group consisting of ammonia, hydrogen, and

sulfur dioxide.

15. The method of claim 14 wherein after the gas is applied, the substrate is rinsed with deionized water.

16. The method of claim 15 wherein the gas is ammonia.

17. The method of claim 16 wherein the ammonia is mixed with nitrogen.

18. The method of claim 17 wherein the mixture of ammonia and nitrogen is applied at a pressure of between 50 Torr and about one atmosphere.

19. The method of claim 18 wherein the mixture of ammonia nitrogen is applied at about atmospheric pressure.